



Pluto AO
Pre-Proposal Conference
Space Access
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Karen Poniatowski
Acting Deputy Associate Administrator
for Space Access



Agenda

SPACE ACCESS OFFICE

- OSF SPACE ACCESS OBJECTIVES/ORGANIZATION
- NASA LAUNCH VEHICLE OPTIONS
- KEY SPACE TRANSPORTATION POLICY
- OVERVIEW OF VEHICLE QUALIFICATION POLICY
- US ELV CONSIDERATIONS
- SPACE SHUTTLE CONSIDERATIONS
- SPECIAL CONSIDERATIONS
- PLUTO AO LAUNCH VEHICLE POINTS OF CONTACT



Space Access Program Objectives

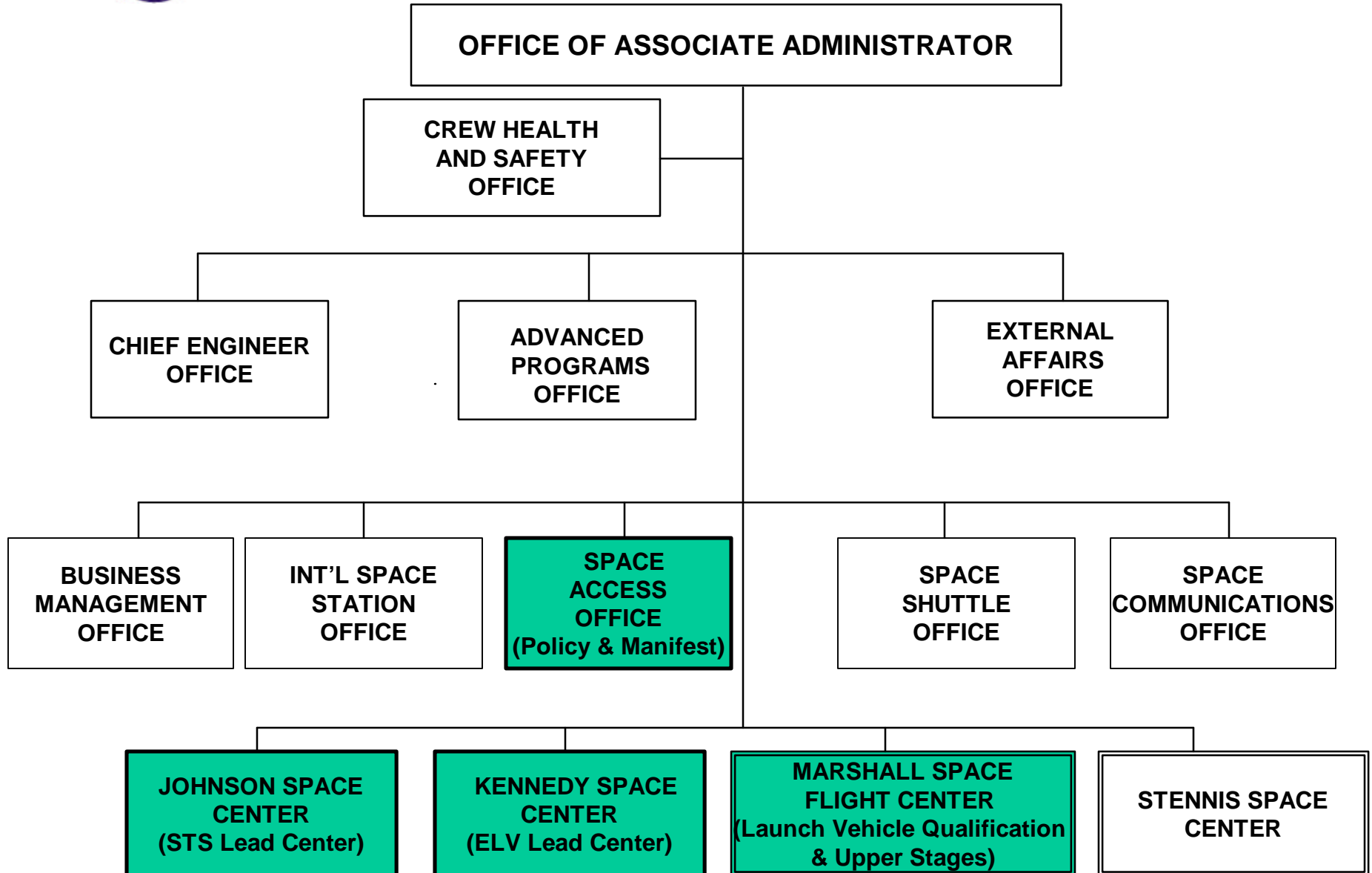
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- Provide Safe, Reliable, On-time Cost Effective Launch Services That Meet Or Exceed Customer Requirements
- Structure Government Technical Oversight to Maximize Probability of Mission Success Within Constrained Resources
- Establish Contractual Mechanisms To Enable Access To Fullest Range Of Available Launch Services



Office Of Space Flight

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Space Access Office

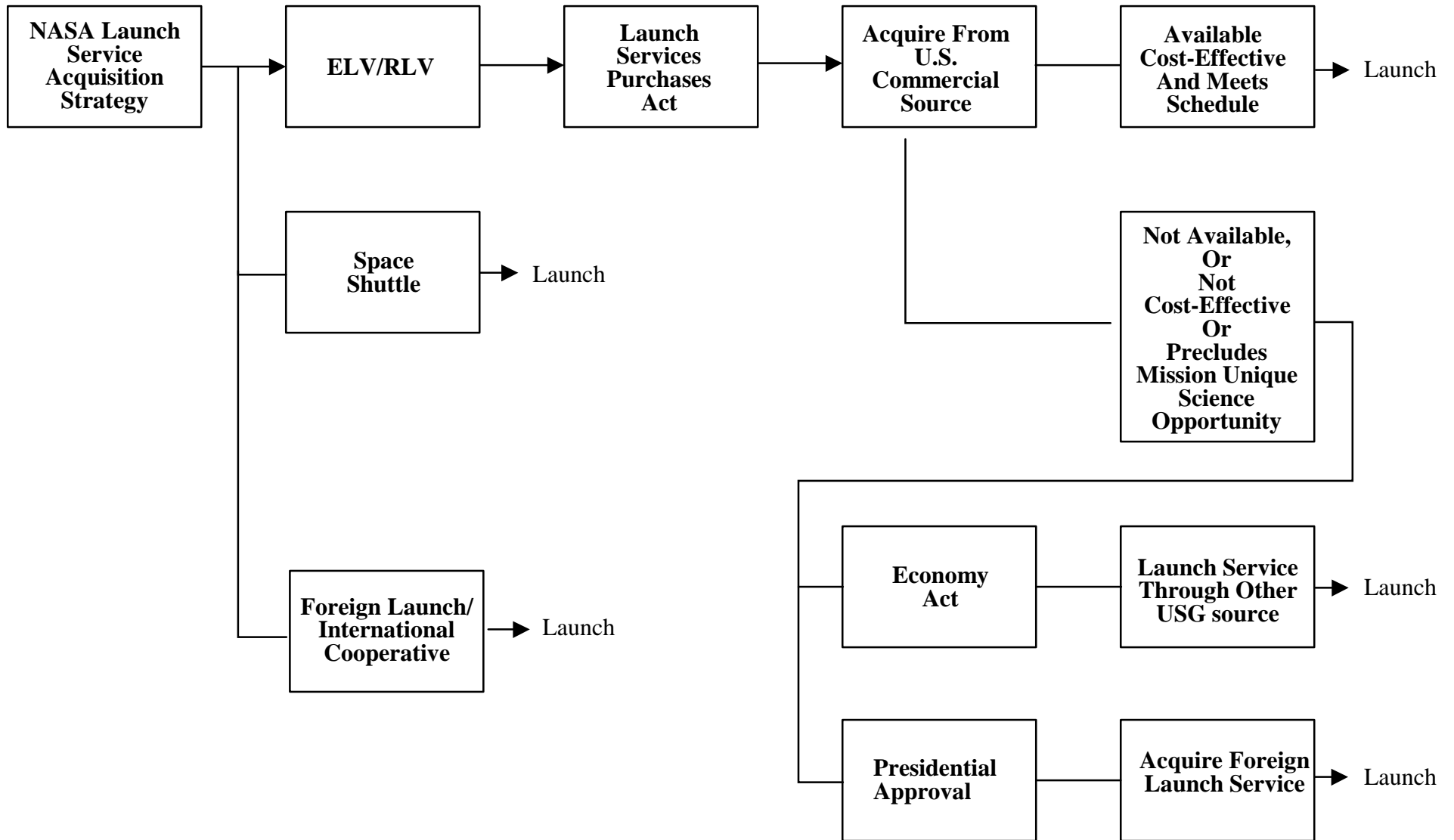
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- **Establish Policy**
 - Office Of Space Flight Provided/Arranged Space Transportation Services For NASA And NASA Sponsored Payloads
- **Identify & Aggregate Launch Requirements**
 - Maintain NASA Launch Manifests
 - Develop Acquisition Strategies To Meet Requirements
 - Identify / Initiate New Services
 - Manage Shuttle Launch Assignment Process (Form 1628)
- **Chair OSF Flight Planning Board**
 - Baseline, Mission Launch Planning (Vehicle / Date)
 - Anticipate / Resolve Launch Conflicts for ELV and STS
- **Provide Policy Direction To The Program Offices**
 - Compliance with Launch Services Risk Mitigation Policy For NASA-owned /Sponsored Payloads
 - Consistency with Shuttle Use Policy



NASA Launch Alternatives

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Launch Vehicle Options

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- NASA Acquired Launch Services
 - Delta II, III, IV
 - Atlas III, V
- Dedicated Space Shuttle Mission
 - STS/IUS
 - STS w/ TBD Upper Stage
- Potential Contributed Foreign Launch Vehicles
 - Sealaunch
 - Ariane
 - Proton, Soyuz
 - HII



Requirements Process

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- Enterprise AO
 - Seeks Proposals To Meet Agency Scientific Objectives
 - AO Provides Guidelines For Spacecraft And Launch Vehicle,
- The Proposal(s) Selection Based On Scientific Merit
- New Missions Baselined for Flight at The Flight Planning Board(FPB)
- STS
 - STS assignment considers STS Use Policy Criteria
 - STS Primary payload assignments require congressional notification
 - JSC identifies launch opportunities, Form 1628 submitted by Enterprise, approved by OSF for STS launch
- ELV
 - ELV assignment baselines ELV performance class
 - Prior to nominal ELV Launch Services ATP, KSC tasked to conduct competitive selection for individual mission from qualified sources consistent with agreed to risk mitigation considerations
 - FPB approves final vehicle assignment, risk mitigation strategy and authorizes KSC to commit to launch service



Key Space Access Policies

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- NSTC PRD 2, 1996 - National Space Policy
- NSTC PDD 4, 1994 - National Space Transportation Policy
 - NSTC PDD 4, par. VI - Use of Foreign Launch Vehicles
- Public Law 105-303 §210-203 - Launch Services Purchase Act
- Public Law 101-611 §112, 1991 (42 U.S.C. 2465a) - Shuttle Use Policy
- NASA Policy Directives
 - NPD 8610.7 - Launch Services Risk Mitigation Policy for NASA Owned or NASA-sponsored Payloads
 - NPD 8610 - Office of Space Flight (OSF) Space Shuttle Services for NASA and NASA-Sponsored Payloads
 - NPD 8610.23A - Technical Oversight for Expendable Launch Vehicles (ELV) Launch Services
 - NPD 8610.24A - Expendable Launch Vehicle (ELV) Launch Services Readiness Reviews



Foreign Launch Vehicle Policy

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- National Space Transportation Policy Requires All US Government Payloads Be Launched On Vehicles Manufactured In the US.
 - Exceptions:
 - Waived By President, Or His Designee
 - International Cooperative - Launch on No-funds Exchanged Basis with Foreign Partner
 - To date, No Agency has formally pursued an exception to the policy with the Office Of Space Technology Policy



Launch Vehicle Risk Mitigation

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- NASA Policy Directive “Launch Services Risk Mitigation Policy for NASA-Owned or NASA-Sponsored Payloads”.
 - Balances mission risk with launch vehicle demonstrated flight history and maturity.
 - Seeks to ensure that taxpayer-funded spacecraft are not exposed to excessive risk
- The Risk Mitigation Policy identifies three risk categories
 - Risk Category 1: New Launch Vehicles (no prior flight history) - Low Cost, Non-mission Critical Payload
 - Risk Category 2: Launch Vehicle meets minimum one fully successful launch - Medium Cost, Medium Critical Payload.
 - Risk Category 3: Launch Vehicle meets minimum 14 consecutive successful launches (i.e., 95-percent reliability @ 50-percent confidence level) - High Cost, Mission Critical Payloads
- Category 3 Payloads on Launch Vehicles < 14 Flights
 - Modified/Alternate Risk Mitigation Approach Under Development (e.g. vehicle with at least 6 consecutive successes with family heritage, additional insight/analysis)



Launch Vehicle Heritage & Risk

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<u>Vehicle</u>	<u>Success Record</u>	<u>Vehicle Qualification Status</u>
Shuttle	100/101	Cat. 3
Delta II (79XX)	75/77	Cat. 3
Delta III	1/3	Cat. 2/Modified Cat. 3
Delta IV	TBD	Modified Cat. 3 (1st Flight. ~ 2002)
Atlas II	52/52	Cat. 3
Atlas III	1/1	Cat. 2/Modified Cat. 3
Atlas V	TBD	Modified Cat. 3 (1st Flight. ~ 2002)

Proposers should address compliance with NPD- 8610.7,
Launch Services Risk Mitigation Policy for Non-U.S.
Contributed Launch Vehicles and/or proposed risk mitigation strategy



U.S. ELV Considerations

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- NASA Launch Services Contracts In Place to Acquire:
 - Delta II, III, IV, IVH
 - Atlas III, V
- Risk Management Considerations
 - Delta III and Atlas III :
 - Each has one demonstrated successful flight
 - Delta IV medium/ heavy & Atlas V :
 - Still in Development, first flights targeted for late 2001/2002
 - KSC developing a modified/alternate risk mitigation approach for the Delta IV and Atlas V launch families
 - Risk of these systems comparable for Pluto AO proposals development
- Special Considerations
 - Recommend PI maintain dual-compatibility between Delta IV and Atlas V As far into development as practical (at least until both launch systems have demonstrated initial successful flight)
 - PI should identify/coordinate with KSC planned responsibility for acquisition of upper stage, if required on an ELV



Space Shuttle Considerations

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- Space Shuttle Use Policy
 - Current law/policy restricts use of Space Shuttle for Primary Payloads to those that:
 - Require Shuttle Unique Capabilities
 - Require Human Interaction, and/or
 - Other Compelling Circumstances
 - Congressional notification required for any primary payload baselined for launch on the Space Shuttle with identification of applicable use criteria
- Space Shuttle Availability
 - Space Shuttle Manifest focused on ISS Assembly thru 2006
 - Current Manifest Could Support Dec. 2004 Launch Opportunity on Columbia (funding augmentation required to add a flight)
 - Increased Launch Opportunities Post 2006 Projected
- Other Considerations
 - Potential Unique Payload Carrier Development
 - Space Shuttle Compatible Upper Stage
 - Flight of Nuclear Material



Other Special Considerations

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- Presidential Approval Required to Launch U.S. Provided Nuclear Materials on ANY Launch Vehicle, including Foreign Launch Vehicles
 - Nuclear approval effort should be started as soon as practical
 - Extensive task to gaining Nuclear Launch Approval
 - Approvals to date have only been for US launch systems
 - Extensive Launch Vehicle Data Books Required to Evaluate Failure Scenarios
 - Atlas V and Delta IV Launch Vehicle Data Books in work.
 - STS Launch Vehicle Data Books require update



Launch Vehicle Contacts

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- ELV's
 - Kennedy Space Center, Darrell Foster, Code VB-C, Kennedy space Center, FL, 321-476-3622, Darrell.Foster-1@kmail.ksc.nasa.gov
- Space Shuttle
 - Johnson Space Center: J. J. Conwell, Code MT2, Houston, Texas 281-483-1178, jconwell@ems.jsc.nasa.gov
- Upper Stages
 - Marshall Space Flight Center: David Stephenson, Code TD12, Huntsville, AL , 256-544-0211. david.d.stephenson@msfc.nasa.gov
- NASA Headquarters
 - Robert Elsbernd, Code MV, Washington D.C. 202-358-4417, relsbernd@hq.nasa.gov
 - John Schafer, Code MV, Washington D.C., 202-358-4621, jschafer@hq.nasa.gov